CCA GCA ACC AAT GAT GCC CGT T-TAMRA-3'
CA GCA ACC AAT GAT GCC CGT T-TAMRA-3'

CCA GCA AGC ACT GAT GCC TGT T-TAMRA-3'
CA GCA AGC ACT GAT GCC TGT T-TAMRA-3'

**Fig. 1A**

Fluorescent Dyes

| | Absorbance Maxima | Emission Maxima |
|---|---|---|
| Fluorescein | 494nm | 525nm |
| Tetrachloro fluorescein | 521nm | 536nm |
| TAMRA | 565nm | 580nm |

**Fig. 1B**

Cleaved Fragments:

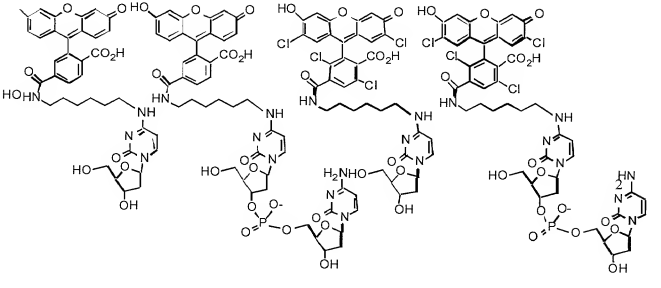


**Fig. 1C**

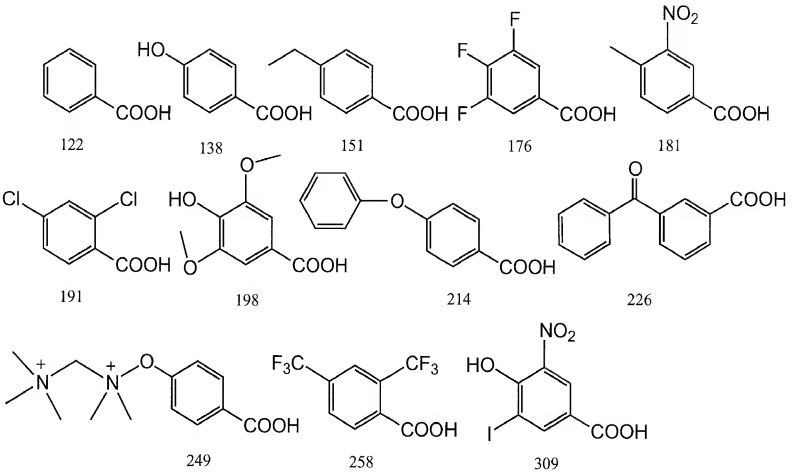

HO
COOH
F
NO2
122
138
151
176
181
Cl
O
191
198
214
226
+
N
249
F3C
CF3
258
I
309

**Fig. 2**

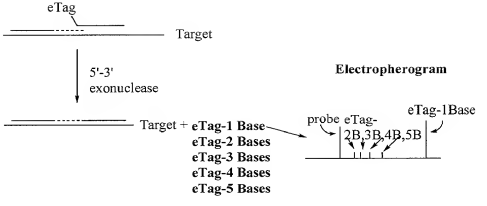

eTag
Target
5'-3'
exonuclease
Target +
eTag-1 Base
eTag-2 Bases
eTag-3 Bases
eTag-4 Bases
eTag-5 Bases
Electropherogram
probe eTag-
2B,3B,4B,5B
eTag-1Base

Fig. 3A

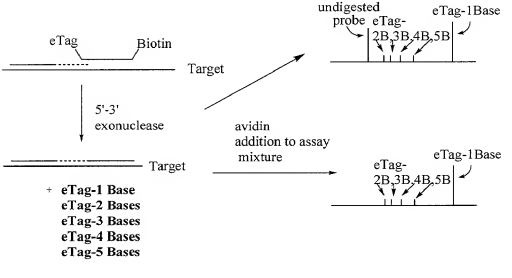

eTag
Biotin
Target
5'-3'
exonuclease
Target
+ eTag-1 Base
eTag-2 Bases
eTag-3 Bases
eTag-4 Bases
eTag-5 Bases
undigested
probe eTag-
2B,3B,4B,5B
eTag-1Base
avidin
addition to assay
mixture
eTag-
2B,3B,4B,5B
eTag-1Base

Fig. 3B

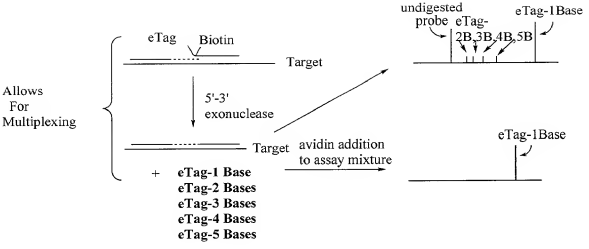

Allows
For
Multiplexing
eTag
Biotin
Target
5'-3'
exonuclease
Target
+
eTag-1 Base
eTag-2 Bases
eTag-3 Bases
eTag-4 Bases
eTag-5 Bases
avidin addition
to assay mixture
undigested
probe
eTag-
2B,3B,4B,5B
eTag-1Base
eTag-1Base

Fig. 3C

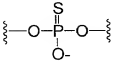

S
O
P
O
O-

Fig. 3D

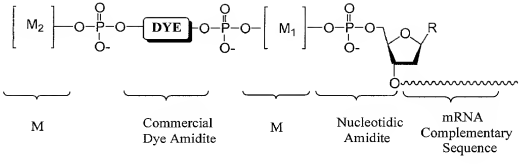

M2
DYE
M1
R
M
Commercial
Dye Amidite
M
Nucleotidic
Amidite
mRNA
Complementary
Sequence

Fig. 4

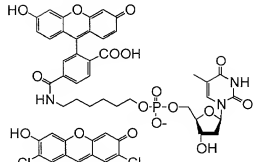
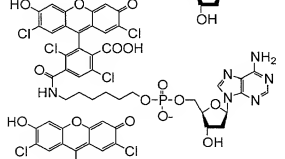
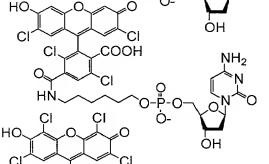
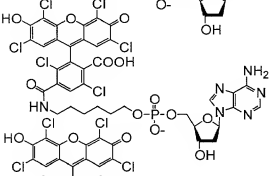
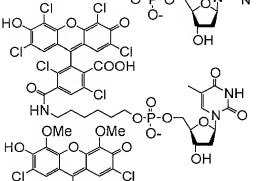
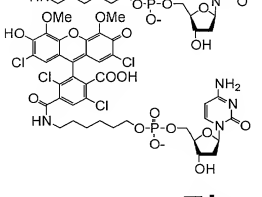
| e-tag Reporter | Elution Time on CE, min | Mass |
|---|---|---|
|  | 6.4 | 778 |
|  | 7.1 | 925 |
|  | 7.3 | 901 |
|  | 7.7 | 994 |
|  | 8.0 | 985 |
|  | 9.25 | 961 |

Fig. 5

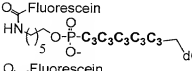
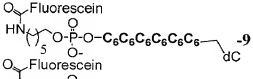
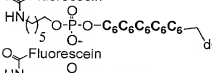
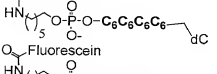
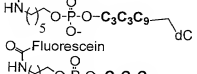
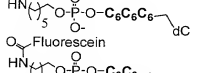
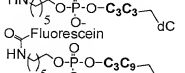
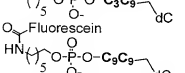
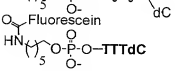
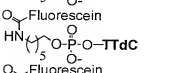
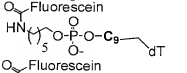
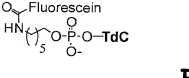
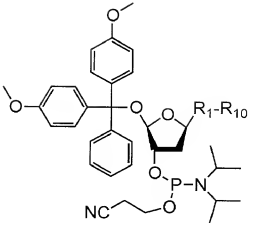
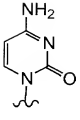
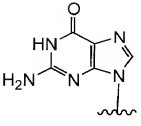
| e-tag Reporter | Charge | Elution Time, min |
|---|---|---|
|  | -8 | 12.1* |
|  | -9 | 12.7 |
|  | -8 | 12.8 |
|  | -7 | 13.1 |
|  | -6 | 13.0 |
|  | -6 | 13.4 |
|  | -5 | 12.8* |
|  | -5 | 13.2* |
|  | -5 | 14.8 |
|  | -6 | 17.3 |
|  | -5 | 17.0 |
|  | -4 | 15.2* |
|  | -4 | 16.5 |

Fig. 6

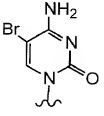


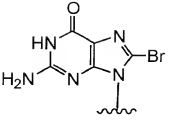

227



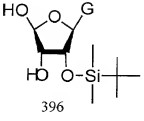

267



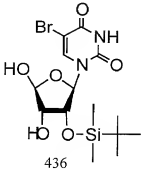

306



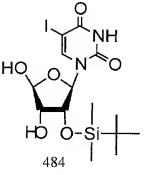

346



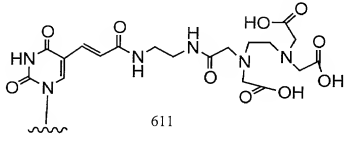

396




436




484




611

**Fig. 7**

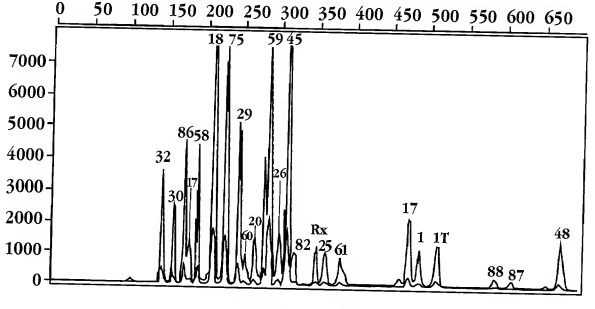

0 50 100 150 200 250 300 350 400 450 500 550 600 650
7000
6000
5000
4000
3000
2000
1000
0
18 75 59 45
29
86 58
32
30
17
26
20
60
Rx
82 25 61
17
1 1T
48
88 87

Fig. 8

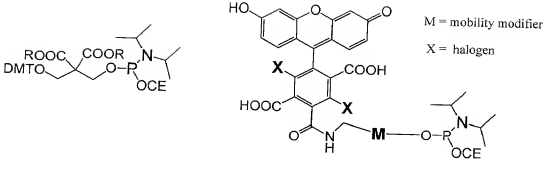
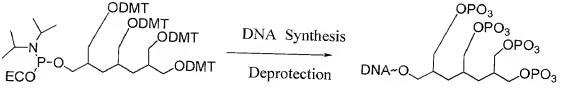

ROOC
COOR
DMTO
O
P
N
OCE
HO
O
O
X
COOH
HOOC
X
O
N
H
M
O
P
N
OCE
M = mobility modifier
X = halogen

Fig. 9




( 9 negative charges per coupling)

**Fig. 10**

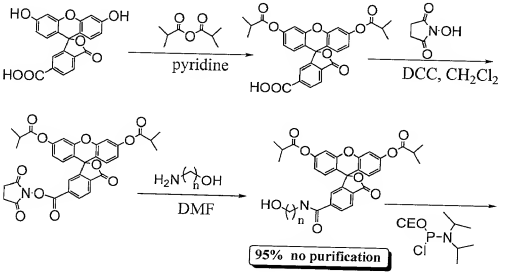



Fig. 11

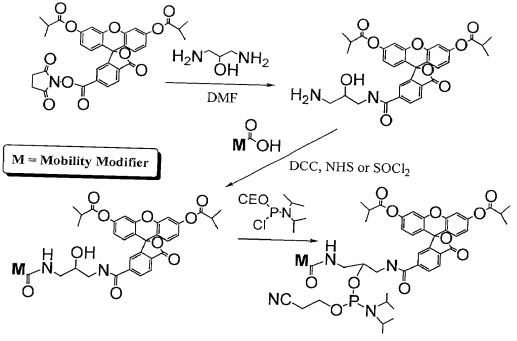



Fig. 12

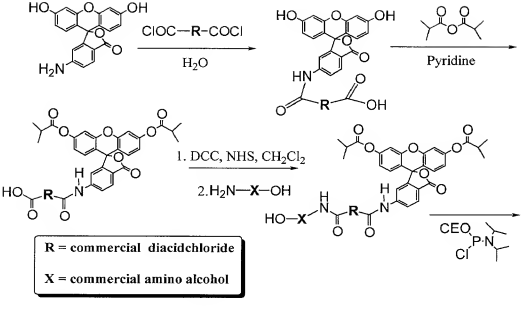

ClOC—R-COCl
H2O
Pyridine
1. DCC, NHS, CH2Cl2
2.H2N—X—OH
R = commercial diacidchloride
X = commercial amino alcohol

Fig. 13

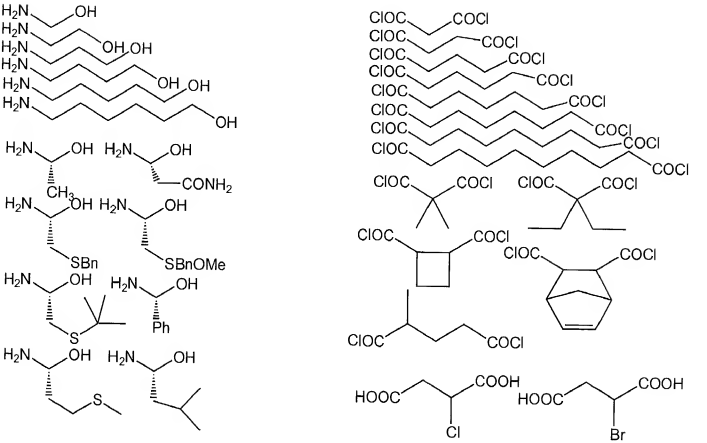

H2N OH
OH OH
OH OH
OH
CH3
CONH2
SBn
SBnOMe
S
Ph
S
ClOC COCl
HOOC COOH
Cl
Br

**Fig. 14**

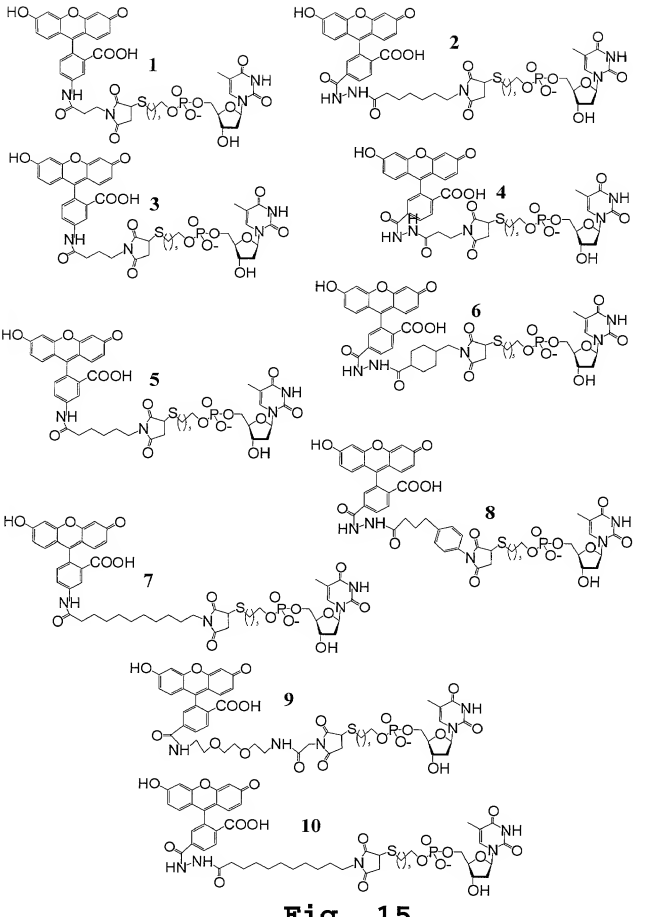



Fig. 15

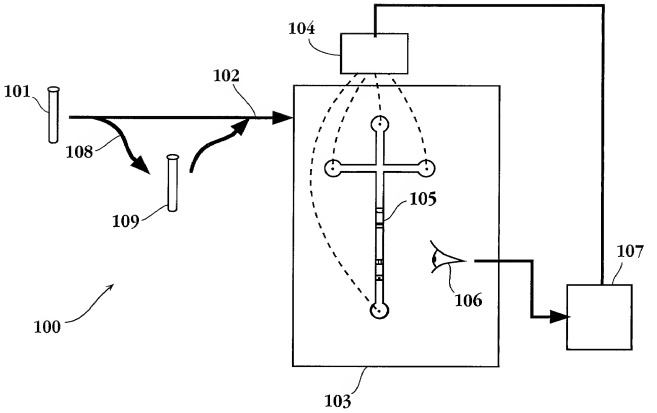



Fig. 16

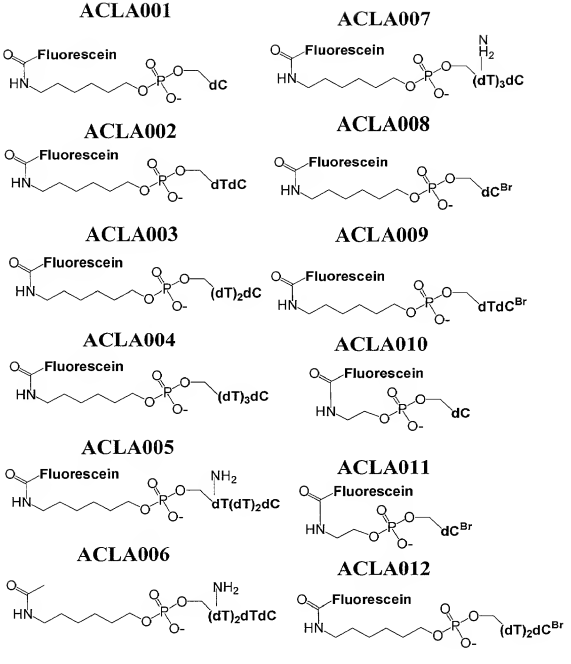

ACLA001
Fluorescein
dC
ACLA002
Fluorescein
dTdC
ACLA003
Fluorescein
(dT)2dC
ACLA004
Fluorescein
(dT)3dC
ACLA005
Fluorescein
NH2
dT(dT)2dC
ACLA006
NH2
(dT)2dTdC
ACLA007
Fluorescein
N
H2
(dT)3dC
ACLA008
Fluorescein
dCBr
ACLA009
Fluorescein
dTdCBr
ACLA010
Fluorescein
dC
ACLA011
Fluorescein
dCBr
ACLA012
Fluorescein
(dT)2dCBr

Fig. 17A

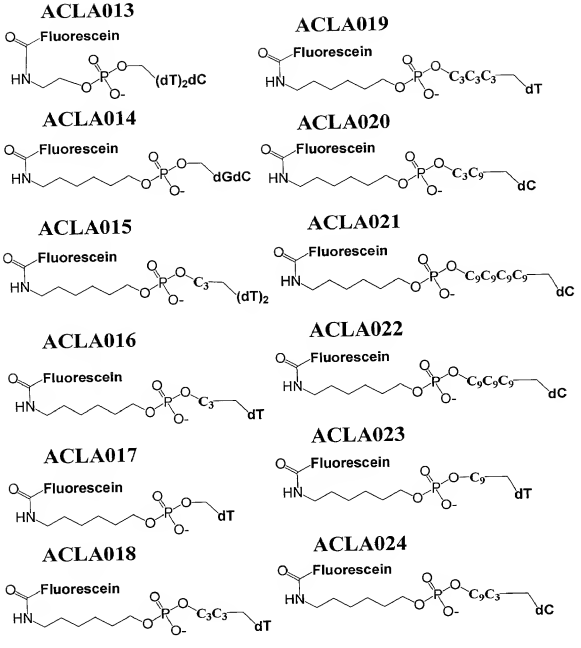

ACLA013
Fluorescein
HN
O
O
P
O-
(dT)2dC
ACLA019
Fluorescein
C3C3C3
dT
ACLA014
Fluorescein
dGdC
ACLA020
Fluorescein
C3C9
dC
ACLA015
Fluorescein
C3
(dT)2
ACLA021
Fluorescein
C9C9C9C9
dC
ACLA016
Fluorescein
C3
dT
ACLA022
Fluorescein
C9C9C9
dC
ACLA017
Fluorescein
dT
ACLA023
Fluorescein
C9
dT
ACLA018
Fluorescein
C3C3
dT
ACLA024
Fluorescein
C9C3
dC

Fig. 17B

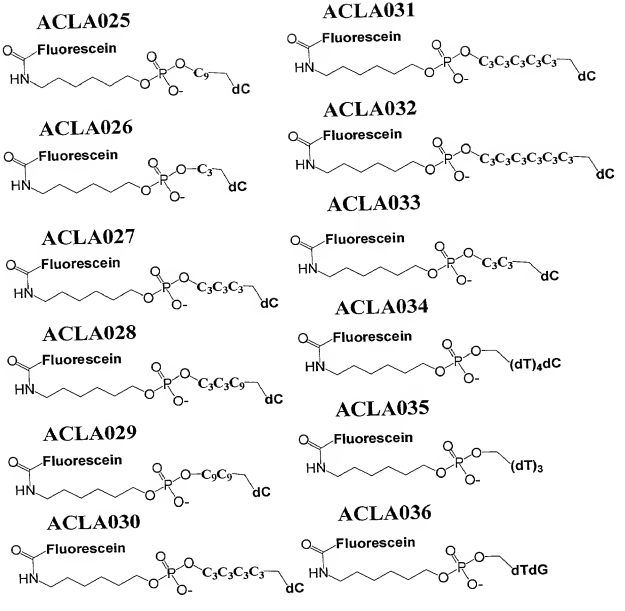

ACLA025
Fluorescein
HN
O
O
O
P
O-
C9
dC
ACLA026
Fluorescein
HN
C3
dC
ACLA027
Fluorescein
HN
C3C3C3
dC
ACLA028
Fluorescein
HN
C3C3C9
dC
ACLA029
Fluorescein
HN
C9C9
dC
ACLA030
Fluorescein
HN
C3C3C3C3
dC
ACLA031
Fluorescein
HN
C3C3C3C3C3
dC
ACLA032
Fluorescein
HN
C3C3C3C3C3C3
dC
ACLA033
Fluorescein
HN
C3C3
dC
ACLA034
Fluorescein
HN
(dT)4dC
ACLA035
Fluorescein
HN
(dT)3
ACLA036
Fluorescein
HN
dTdG

Fig. 17C

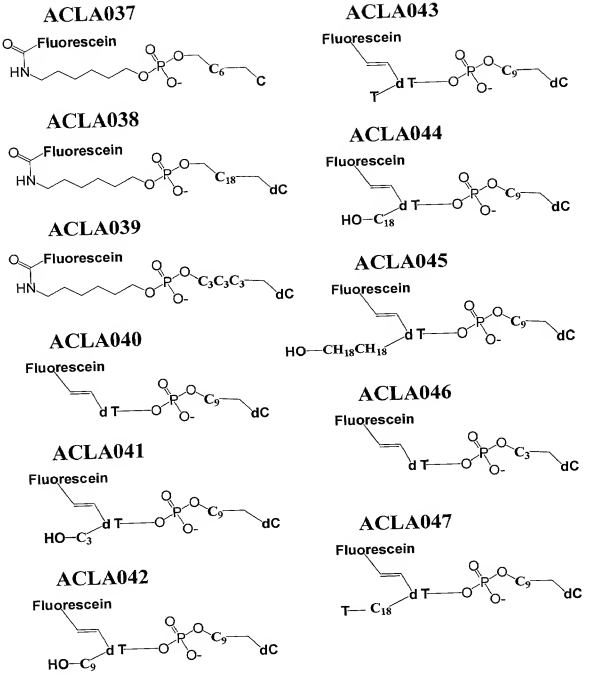

ACLA037
Fluorescein
HN
C6
C
ACLA038
Fluorescein
HN
C18
dC
ACLA039
Fluorescein
HN
C3C3C3
dC
ACLA040
Fluorescein
dT
C9
dC
ACLA041
Fluorescein
HO—C3
dT
C9
dC
ACLA042
Fluorescein
HO—C9
dT
C9
dC
ACLA043
Fluorescein
T
dT
C9
dC
ACLA044
Fluorescein
HO—C18
dT
C9
dC
ACLA045
Fluorescein
HO—CH18CH18
dT
C9
dC
ACLA046
Fluorescein
dT
C3
dC
ACLA047
Fluorescein
T—C18
dT
C9
dC

Fig. 17D

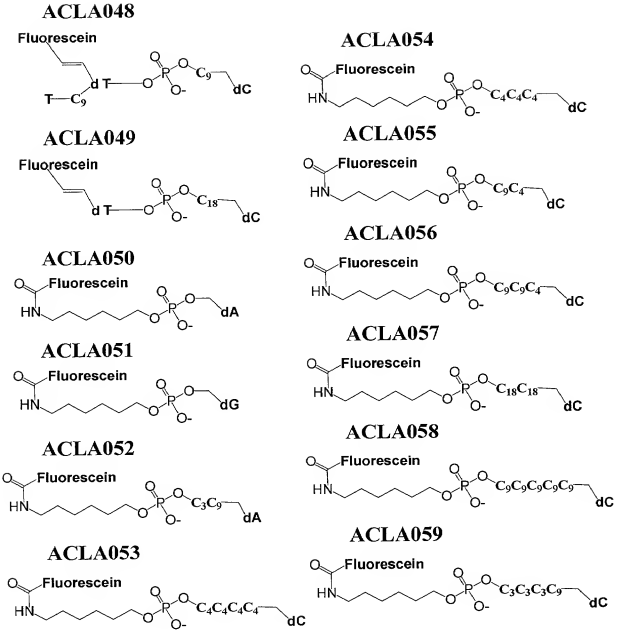

ACLA048
Fluorescein
dT
T
C9
C9
dC
ACLA049
Fluorescein
dT
C18
dC
ACLA050
Fluorescein
HN
dA
ACLA051
Fluorescein
HN
dG
ACLA052
Fluorescein
HN
C3C9
dA
ACLA053
Fluorescein
HN
C4C4C4C4
dC
ACLA054
Fluorescein
HN
C4C4C4
dC
ACLA055
Fluorescein
HN
C9C4
dC
ACLA056
Fluorescein
HN
C9C9C4
dC
ACLA057
Fluorescein
HN
C18C18
dC
ACLA058
Fluorescein
HN
C9C9C9C9C9
dC
ACLA059
Fluorescein
HN
C3C3C3C9
dC

Fig. 17E

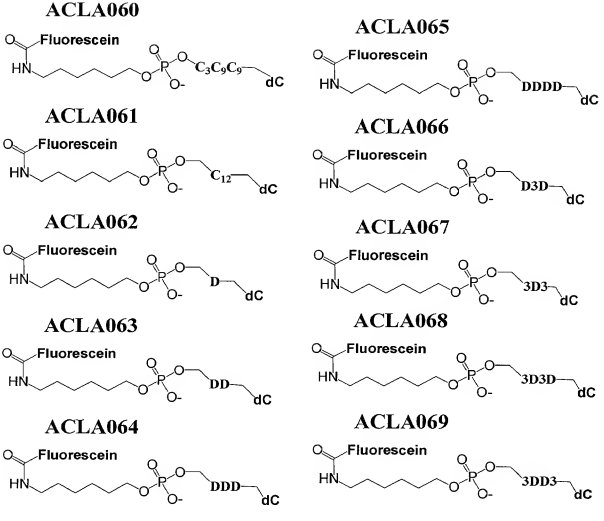

ACLA060
Fluorescein
HN
O
O
P
O-
$C_3C_9C_9$
dC
ACLA061
Fluorescein
$C_{12}$
dC
ACLA062
Fluorescein
D
dC
ACLA063
Fluorescein
DD
dC
ACLA064
Fluorescein
DDD
dC
ACLA065
Fluorescein
DDDD
dC
ACLA066
Fluorescein
D3D
dC
ACLA067
Fluorescein
3D3
dC
ACLA068
Fluorescein
3D3D
dC
ACLA069
Fluorescein
3DD3
dC

Fig. 17F

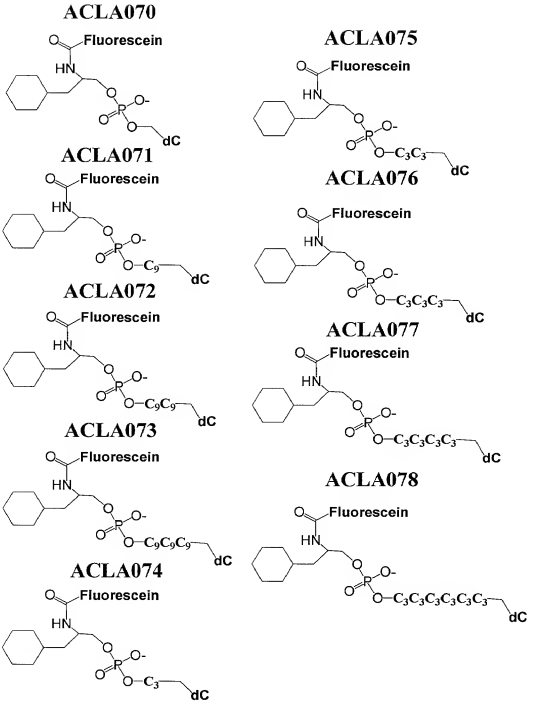

ACLA070
Fluorescein
HN
O
O
P
O-
O
dC
ACLA071
Fluorescein
HN
O
O
P
O-
O
C9
dC
ACLA072
Fluorescein
HN
O
O
P
O-
O
C9C9
dC
ACLA073
Fluorescein
HN
O
O
P
O-
O
C9C9C9
dC
ACLA074
Fluorescein
HN
O
O
P
O-
O
C3
dC
ACLA075
Fluorescein
HN
O
O
P
O-
O
C3C3
dC
ACLA076
Fluorescein
HN
O
O
P
O-
O
C3C3C3
dC
ACLA077
Fluorescein
HN
O
O
P
O-
O
C3C3C3C3
dC
ACLA078
Fluorescein
HN
O
O
P
O-
O
C3C3C3C3C3C3
dC

Fig. 17G

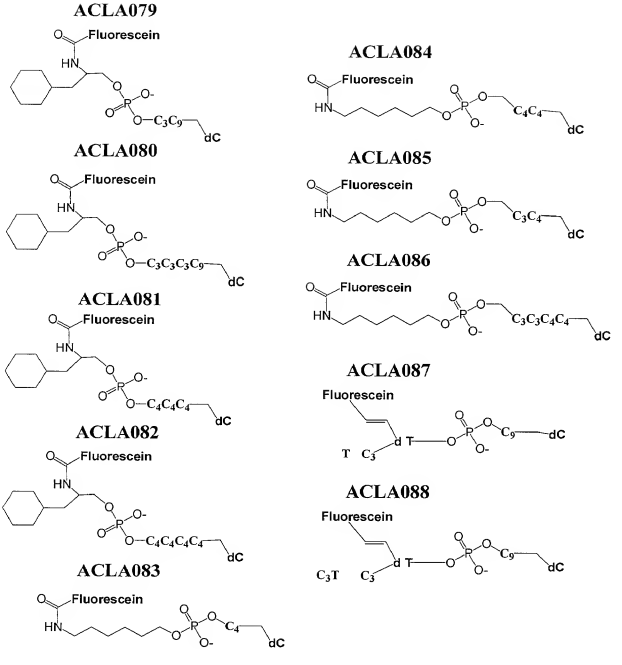

ACLA079
Fluorescein
HN
O
O
P
O-
O-
O
$C_3C_9$
dC
ACLA080
Fluorescein
HN
O
O
P
O-
O-
O
$C_3C_3C_3C_9$
dC
ACLA081
Fluorescein
HN
O
O
P
O-
O-
O
$C_4C_4C_4$
dC
ACLA082
Fluorescein
HN
O
O
P
O-
O-
O
$C_4C_4C_4C_4$
dC
ACLA083
Fluorescein
HN
O
O
P
O-
O-
O
$C_4$
dC
ACLA084
Fluorescein
HN
O
O
P
O-
O-
O
$C_4C_4$
dC
ACLA085
Fluorescein
HN
O
O
P
O-
O-
O
$C_3C_4$
dC
ACLA086
Fluorescein
HN
O
O
P
O-
O-
O
$C_3C_3C_4C_4$
dC
ACLA087
Fluorescein
T
$C_3$
d
T
O
O
P
O-
O-
O
$C_9$
dC
ACLA088
Fluorescein
$C_3T$
$C_3$
d
T
O
O
P
O-
O-
O
$C_9$
dC

Fig. 17H

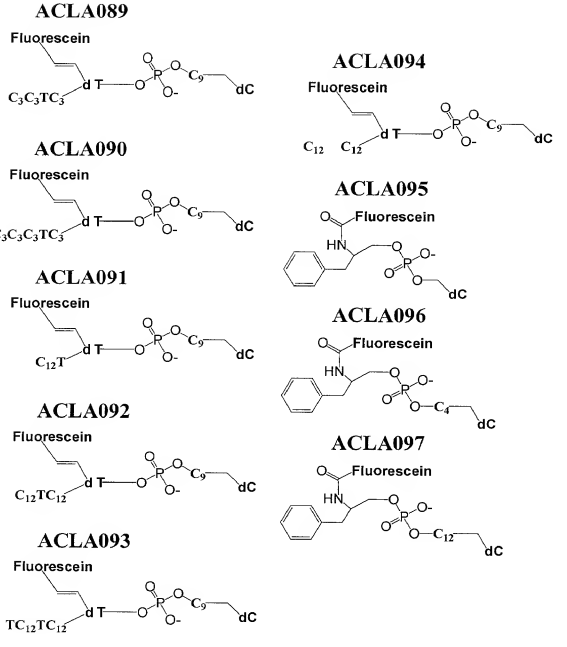

ACLA089
Fluorescein
$C_3C_3TC_3$
dT
dC
ACLA090
Fluorescein
$C_3C_3C_3TC_3$
dT
dC
ACLA091
Fluorescein
$C_{12}T$
dT
dC
ACLA092
Fluorescein
$C_{12}TC_{12}$
dT
dC
ACLA093
Fluorescein
$TC_{12}TC_{12}$
dT
dC
ACLA094
Fluorescein
$C_{12}$ $C_{12}$
dT
dC
ACLA095
Fluorescein
HN
dC
ACLA096
Fluorescein
HN
$C_4$
dC
ACLA097
Fluorescein
HN
$C_{12}$
dC

Fig. 17I

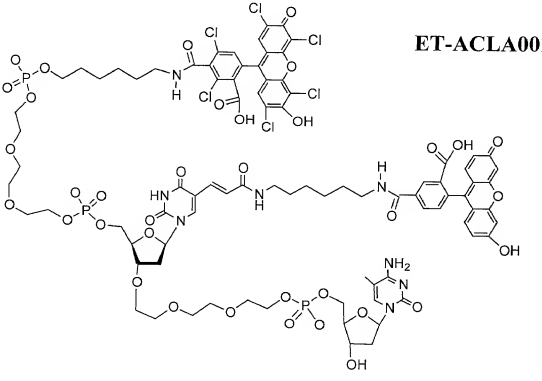



Fig. 17J

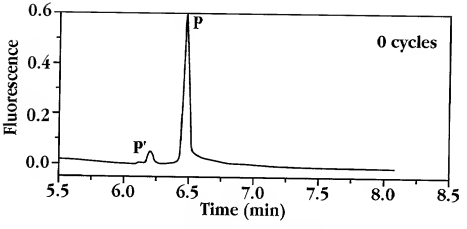



Fig. 18A

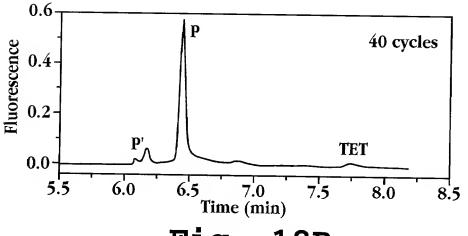



Fig. 18B

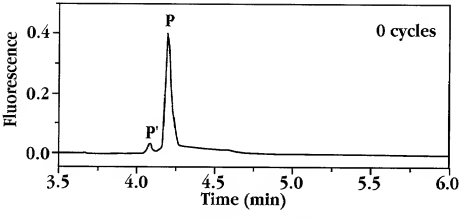



Fig. 19A

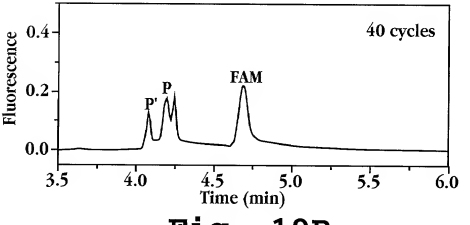



Fig. 19B

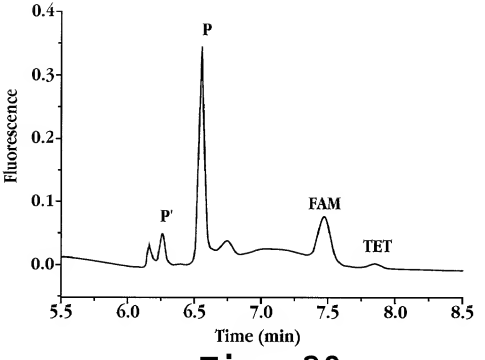

0.4
0.3
0.2
0.1
0.0
Fluorescence
P
P'
FAM
TET
5.5
6.0
6.5
7.0
7.5
8.0
8.5
Time (min)

Fig. 20

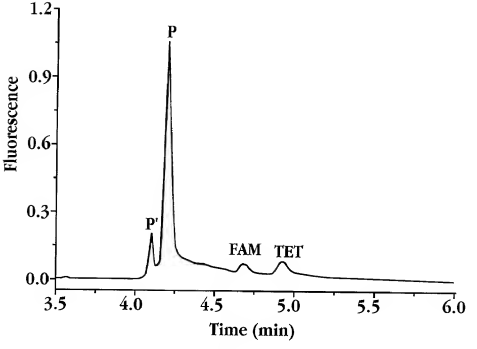

1.2
0.9
0.6
0.3
0.0
Fluorescence
P
P'
FAM
TET
3.5
4.0
4.5
5.0
5.5
6.0
Time (min)

Fig. 21

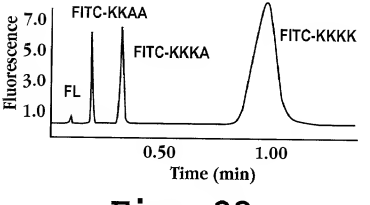

7.0
5.0
3.0
1.0
Fluorescence
FITC-KKAA
FITC-KKKA
FITC-KKKK
FL
0.50
1.00
Time (min)

Fig. 22

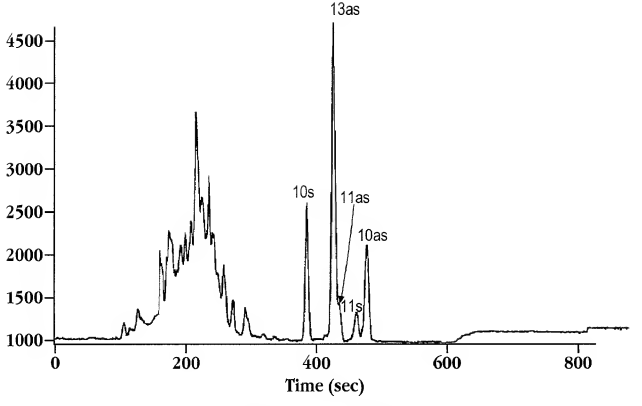



Fig. 23A

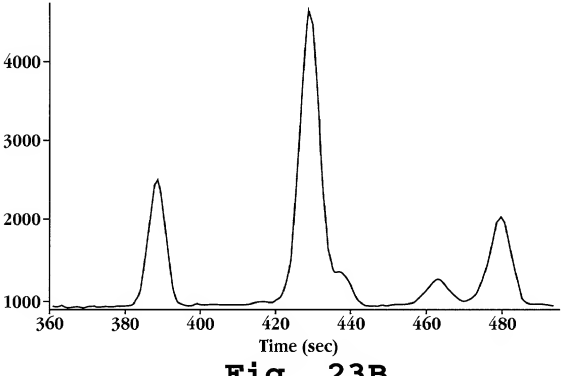



Fig. 23B

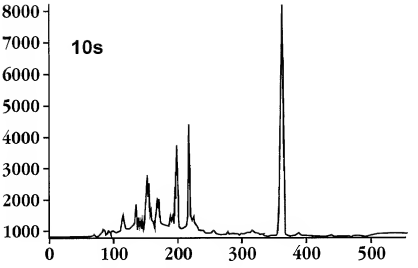



Fig. 23C

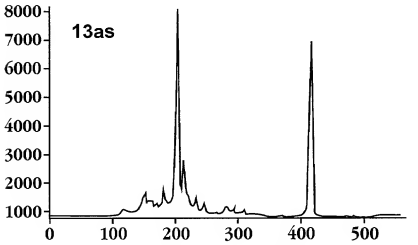



Fig. 23D

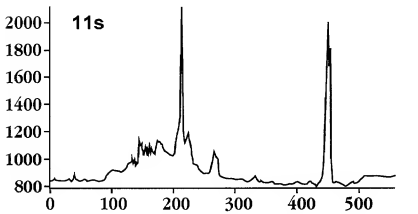



Fig. 23E


Fig. 23F

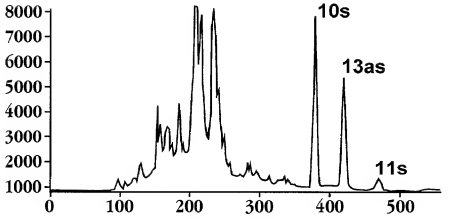



Fig. 23G

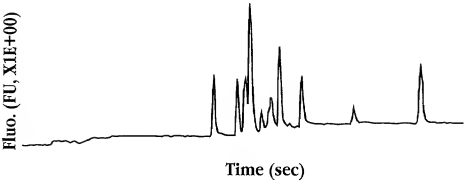



Fig. 24

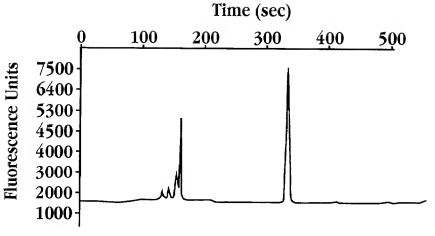



Fig. 25A

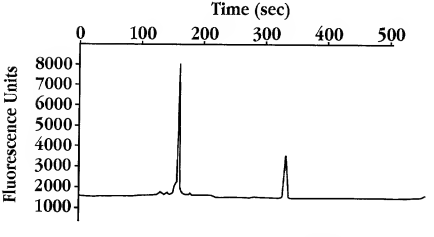



Fig. 25B

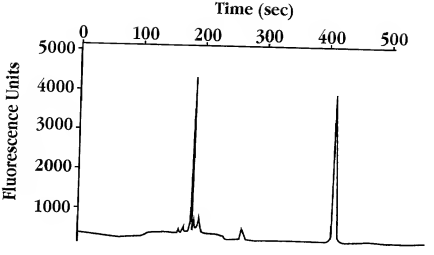



Fig. 25C

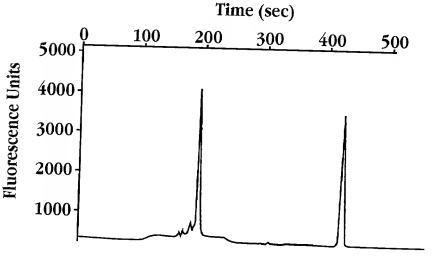



Fig. 25D

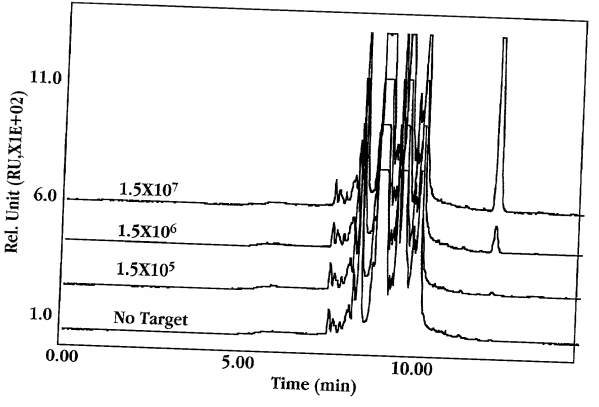



Fig. 26

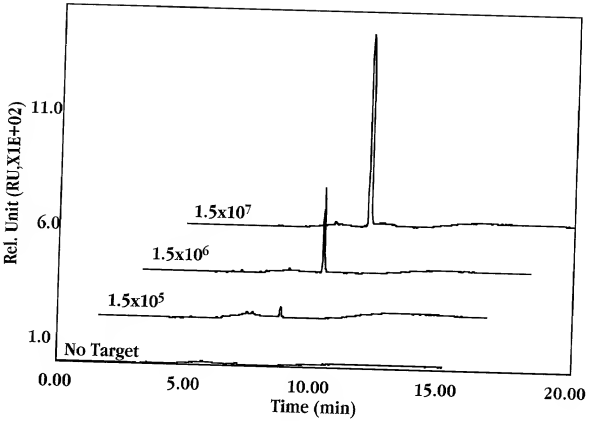



Fig. 27

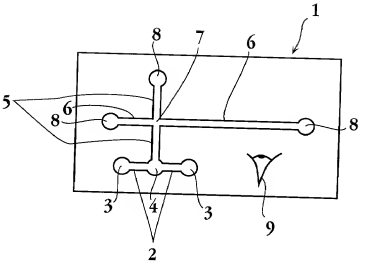



Fig. 28A

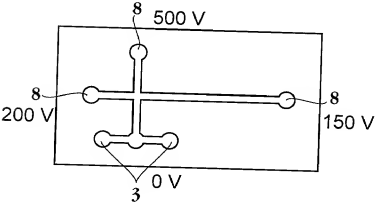



Fig. 28B

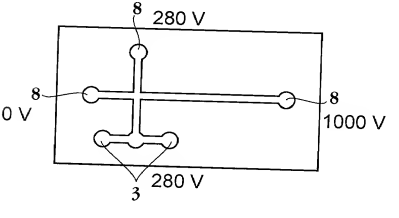



Fig. 28C

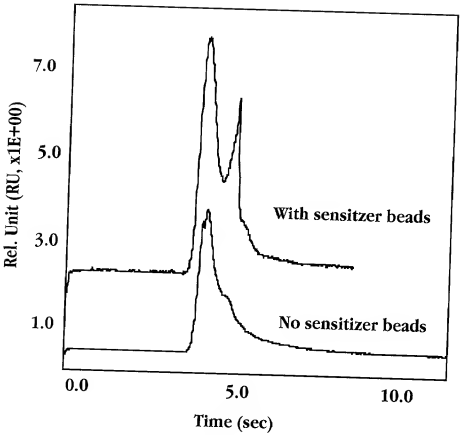

7.0
5.0
3.0
1.0
Rel. Unit (RU, x1E+00)
With sensitzer beads
No sensitizer beads
0.0
5.0
10.0
Time (sec)

Fig. 29

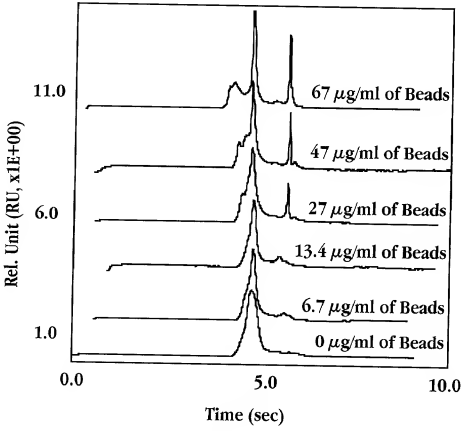

11.0
6.0
1.0
Rel. Unit (RU, x1E+00)
67 μg/ml of Beads
47 μg/ml of Beads
27 μg/ml of Beads
13.4 μg/ml of Beads
6.7 μg/ml of Beads
0 μg/ml of Beads
0.0
5.0
10.0
Time (sec)

Fig. 30

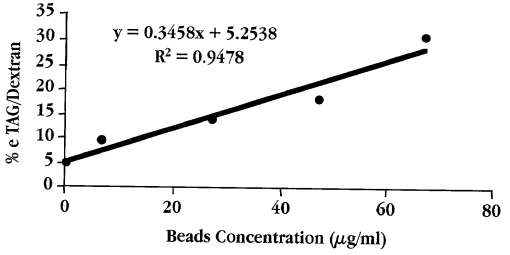

y = 0.3458x + 5.2538
R² = 0.9478
% e TAG/Dextran
Beads Concentration (μg/ml)
0
5
10
15
20
25
30
35
0
20
40
60
80

Fig. 31

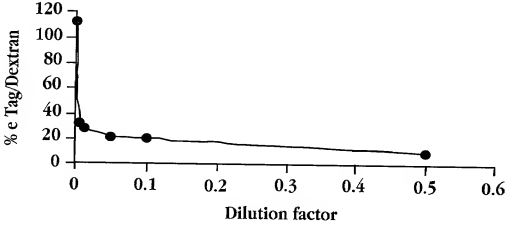

% e Tag/Dextran
Dilution factor
0
20
40
60
80
100
120
0
0.1
0.2
0.3
0.4
0.5
0.6

Fig. 32

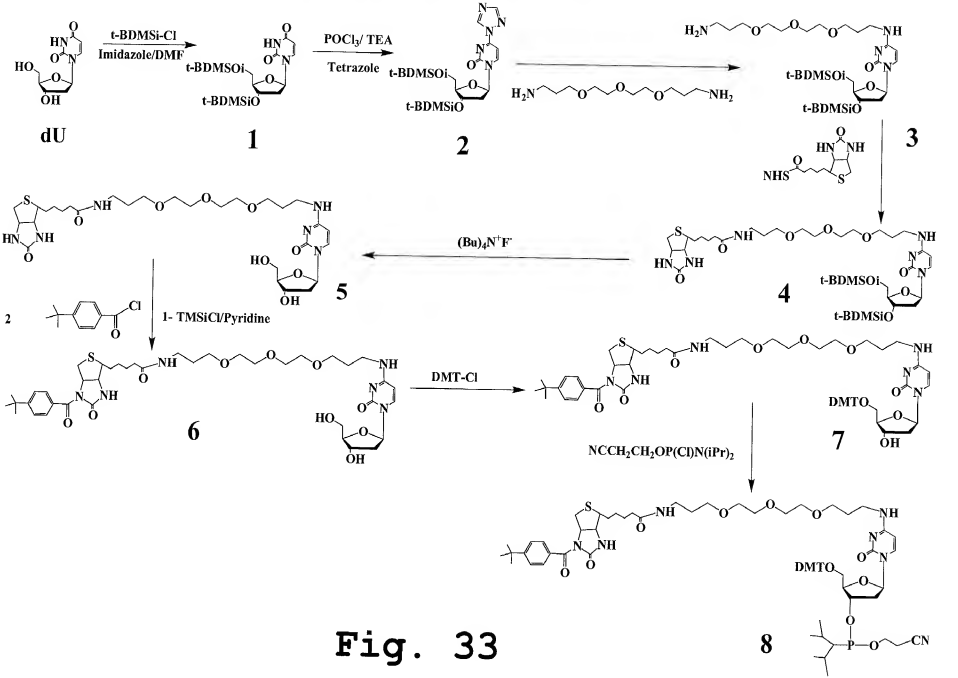

t-BDMSi-Cl
Imidazole/DMF
POCl3/ TEA
Tetrazole
dU
1
2
3
4
5
6
7
8
(Bu)4N+F-
1- TMSiCl/Pyridine
DMT-Cl
NCCH2CH2OP(Cl)N(iPr)2
t-BDMSOi
t-BDMSiO
DMTO
NHS
CN

Fig. 33

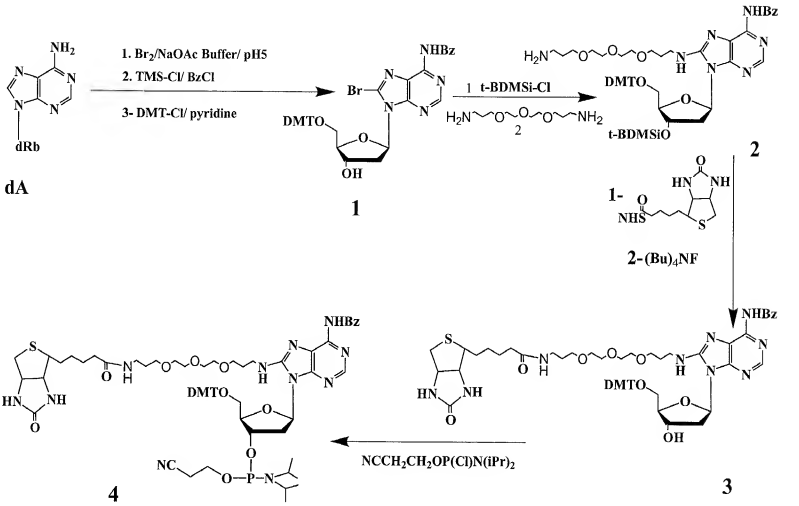

1. Br2/NaOAc Buffer/ pH5
2. TMS-Cl/ BzCl
3- DMT-Cl/ pyridine
dA
1
1 t-BDMSi-Cl
2
t-BDMSiO
1- NHS
2-(Bu)4NF
3
NCCH2CH2OP(Cl)N(iPr)2
4

Fig. 34